RAVALLI NATIONAL WILDLIFE REFUGE

Stevensville, Montana

N A R R A T I V E R E P O R T

1 9 6 8

P e r s o n n e l

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U. S. Department of the Interior

Fish and Wildlife Service

Bureau of Sport Fisheries and Wildlife

C O N T E N T S

RAVALLI NATIONAL WILDLIFE REFUGE

1 9 6 8

I. GENERAL

A. Weather Conditions

Last winter temperatures were mild. Snowfall was light in the valley, moderate in the surrounding mountains. The spring was cool, dry and with much overcast. Peak Mountain run-off occurred the end of May. Most of June and all of July were very dry, though not extremely hot. Abnormally large amounts of rain came in August and early September and temperatures were cool. Early fall was typical with much "Indian Summer." December averaged warmer and drier than normal until the last five days, when heavy snows and severe cold temperatures were recorded.

Here is a summary of the year's weather highlights:

Temperatures				Precip-itation Totals	Remarks
Month	High	Low	Ave.		
					Temp. never reached 0. No snow
Jan.	51	7	23.10	.53	Precip.-.54 below normal.
Feb.	55	4	33.2	1.06	Precip. .06 above normal
Mar.	65	18	41.7	.27	Precip. -.56 below normal
April	81	14	41.8	.15	.63 below normal precip.
May	76	24	35.1	.45	1.07 below normal precip.
June	91	34	60.0	1.33	.40 below normal precip.
July	98	37	66.4	.22	.71 below normal precip.
Aug.	92	35	62.4	1.11	.42 above normal precip.
Sept.	86	31	54.6	2.16	1.24 above normal precip.
Oct.	68	18	42.5	.95	.01 above normal precip.
Nov.	55	11	34.1	.69	below normal precip.
Dec.	47	-21	23.3	1.09	Precip. .09 above normal
					Almost all rec'd last 5 days

B. Habitat Conditions

1. Water

We had good water conditions this year. Surrounding mountains received above average snowfall last winter. As a result spring runoffs charged most tributaries. A certain amount of riverbottom flooding occurred, but that is a relatively normal spring happening here. No excessive flood damaging occurred to the refuge.

Our spring weather was cool. Peak runoff occurred the end of May. About two weeks later than normal. June and July were comparably dry but deep soils retained ample moisture.

Abnormally heavy rains occurred in August. They charged all our ponds, waterways and soils. These excessively heavy and prolonged rains did cause severe problems in harvesting grain crops. Fall season was rated as normally dry. The year was concluded with extremely heavy snowfall in December.

In summary, it was a good water year for habitat management.

2. Food and Cover

Wildlife had good food and cover the entire year. The snow in the valley was not deep last winter and the weather was relatively mild.

Standing small grains in the fields offered good waterfowl food for wintering birds and spring migrants. Winter wheat crops offered good spring and fall browse. It was a good year for seed and berry production. Aquatic plant growth in all the ponds was very good this summer.

Smartweed and water buttercup have already volunteered in Pond No. 5. That pond was completed last fall. It should be an important feeding pond.

Refuge farming is done as a sharecropping program. We left about two thirds of our share of the grain standing in the fields. Use of the grain and stubble fields by waterfowl was very good. Use occurred October through April. Geese browsed the winter wheat in the spring. As a result of those extensive activities, we chose to leave all our share of the grain crop standing in the fields this fall. Good use of the fields has occurred already during the last of December.

More than normal amounts of grain was wasted or left in the fields this harvest season due to the wet weather. This happened throughout this locality. Waterfowl and other forms of wildlife should benefit from this added bonus food source this year.

II. WILDLIFE

A. Migratory Birds

Ducks. Each year we have accomplished more habitat improvement and restoration on this relatively new area. As a planned result, wildlife use has increased annually in proportion to those improvements. Waterfowl use-days have increased by about 100,000 during this year. Duck production has almost doubled, going from 990 in 1967 to almost 1800 in 1968. Total waterfowl production was 2210.

The peak duck population, since the refuge was established, was reached this fall. A total of 9,000 ducks, mainly mallards, used the area during early December. This in itself is not a phenomenal figure. However, it must be remembered that we have only about 900 acres of water and marsh, and about 300 acres of farm land. Also the peak figure was reached during the pressure of the waterfowl hunting season.

Duck and goose pairing and migration build-up was noted at the beginning of March. Wood duck use has increased slightly. Thirty broods were seen. We are doing further work with artificial wood duck nesting houses to encourage greater use of the area by them. It was extremely unusual and interesting to note that wood ducks were observed on the area during the last week in December. These birds were probably brought in by a storm for none were seen on the area since late October, their normal departure time.

Ruddy ducks nested on the area. A total of ten broods were counted. Their nesting activities here were extremely late, commencing during early August. Most of the broods counted were seen at the beginning of September.

Geese. Canada goose-use of the area was about equal to last year, though reported all goose-use days were down. We did not receive the concentration of migrating snow geese that we have had the past few years. Their change of pattern was probably due to weather fronts.

Swan. Several dozen Whistling swan used the refuge during March. Their spring use of the area has been a common occurrence. They are quite an attraction to local bird watchers and visiting school groups.

Wilson's snipe. Wilson's snipe are common in this locality. They nest here and a few even winter in the valley. No special management has been directed towards them. Their benefits are a bi-product and added value of our marsh management. This year, for the first time, a hunting season, requested by the Fish and Game Department, was held for Wilson's snipe. It was in conjunction

with the regular waterfowl season. Hunting pressure and harvesting of the species on the refuge was extremely light.

Shorebirds. Normally we receive most shorebird use during spring migration. However, no large population build-ups were noted this spring. Possibly due to the abnormally cool weather and storm fronts. What build-up did occur happened in early March.

Avocet were rather common during spring and early summer. A peak population of 40 birds was noted during May. They were migrants. None nested on the area.

Three new species were observed on the area this summer. They were the semi palmated plover, Forster's tern and Bonaparte gull.

Most common shorebird nesters on the area are still Killdeer and Wilson's snipe.

Doves. Dove behavior was similar to last year. They arrived on the area in April. About two dozen pair nested here, primarily along the riverbottom. Peak population buildups were in July and September. Highest number was about 300. Most birds left the area by October, but a few stragglers were seen throughout the remainder of the period.

Sora rail were seen commonly during May and a few pairs nested here.

B. Upland Game Birds

About 50 pheasants remained on the area last winter and spring.

The State Fish and Game Department released 175 hens and 33 roosters on the refuge, June 8. This was a cleanup of the State hatchery at Warm Springs. Some mortality was noted. A few of the hens re-nested. Fourteen broods were counted on the entire area. An estimated total of 90 young were raised.

Pheasant hunting was conducted during October. The harvest was light. Many of the refuge birds scattered off of the area or moved into thick riverbottom cover. We estimate that 150 pheasants were on the area at the end of December.

C. Big Game Animals

No major change occurred in our white-tail deer population during the year. We estimate 16 head were using the refuge at the close of the period. Six fawn were raised this year.

No other forms of large mammals were seen on the area this year.

D. Fur Animals, Predators, Rodents and Other Mammals

Muskrats are dispersed throughout the area, but only in limited numbers. We support a population of about 150 animals. We need many times this amount for good marsh management. No immediate trapping is contemplated on the area in hopes that the population will expand as our marsh development is completed. We need the rodent for cattail removal and for their houses that are also used as waterfowl nesting platforms.

Minor beaver activity was noted in tract 11 last spring and further activity was noted on tracts 25 and 27 in August.

Red fox and striped skunk populations are limited. There are about 30 skunks and 12 foxes on the area. This is in contrast to the dense populations had four years ago. Our current populations of these animals present no serious problems.

The riverbottom raccoon population is estimated at 15 animals and is of no concern.

E. Hawks, Eagles, Owls, Crows, Ravens and Magpies

Hawk behavior and use of the area is similar to last year: Several Red-tail and Rough-legs stayed here last winter. Early spring arrivals were Rough-legs, Swainson, Marsh and Sparrow hawks. Sparrow hawks were the most common nester. A pair of Red-tails nested on tract 11.

A Groshawk was again seen on our Christmas bird count this year. Also, there was a Pigeon hawk and a Melanistic Buteo. The melanistic bird appears to all observers to be the same one as seen last year on the Christmas count. It was mentioned in last year's Narrative Report in detail on page 6.

Osprey nest about one mile north of the refuge boundary. Their nesting activities commenced April 13.

Great horned owls are resident here. Five pairs nested on the area in February. Fall migration build up was noted in October.

Short-eared owl were seen commonly during the spring and fall. Three were still observed on the area in late December.

Nothing unusual to report on crows. Normal migration build-ups were noted in the spring and fall, totalling about 100 birds. Five pairs of crows nested on the refuge.

A few ravens were seen last spring. None were observed the rest of the year.

The average refuge population of magpies was 100 birds. Population build-ups of several hundred were noted spring and fall. Predation problems occurred on some duck and pheasant nests. We built a bait trap to remove some of the problem magpies (see photograph No. 24 at the end of this report).

F. Other Birds

The use of the refuge by bird watchers was again a common year-round practice. Four major cooperative song bird counts were also conducted on the refuge again this year. One was an arrival count in late May, another, a mid summer, post nesting season count, and a fall arrival count in September. Also the annual Christmas count.

Our published bird check list, containing 163 species, is now two years old. It is almost in need of revision. Many new species have been observed and further data of seasons of use and abundance has been accumulated.

Following is a list of eight new birds observed and recorded this year:

Warbling vireo, June	American redstart, June
Forster's tern, June	Pygmy nuthatch, June
Bonaparte gull, June	White pelican, August
Western flycatcher, June	Blue jay, November

Tree and violet-green swallows arrived here March 26.

We made some verticle dress cuts with our backhoe in a clay bank on tract 11 last spring. The cut is about 15 x 200 feet. Bank swallows used the verticle cut for nesting immediately. A great assortment of swallows nest on the refuge. Violet-green, Tree, Bank, Rough wing, Cliff and Barn swallows all nest on tracts 10 and 11.

Water pippets were seen in April and were again common in early October.

An albino robin was observed on tract 12 on October 19.

Starling migration buildups occurred at the beginning of October. Concentrations of up to 1,000 birds were seen.

Large flocks of Cedar and Bohemian waxwings were common during November and early December.

We had severe weather the end of December. As a result, the Christmas Bird Count had to be postponed three times. It was finally conducted on December 31st during scattered snow flurries and sub zero weather. Only a handful of people showed up to participate in the count. Deep snow in the area limited travel, and most efforts were concentrated on the refuge. A total of 42 species and 2,450 individual birds were counted. Last year we tallied over 60 species for the valley.

G. Fish

A few brown trout and brook trout were noted in ponds 5 through 10. Some attempts at spawning activity were noted during November. We mention these observations purely for record. Added incidental information on fish is given in the last three paragraphs of VI. E, Violations.

H. Reptiles

Nothing to report.

I. Diseases

No disease of wildlife was noted on the refuge or in the valley this past year.

Four dry cows, two years of age, died on tract 13 during early June. One animal was posted by a local veterinarian. The tissue samples were sent to Bozeman for analysis. Results indicated possible strychnine or arsenic poisoning. The other animals were not posted, due to the cost involved by the permittee.

We made a thorough search of the tract (it only contains 140 acres) trying to find toxic residues. However, we found nothing. The pasture has been used for grazing horses for the past three years with no ill effects on those animals.

We deferred grazing on the tract until October. At that time we pastured horses on it and kept them there for the remainder of the year. No ill effects were noted on the animals. We are puzzled as to what actually did occur this spring with the cattle. It is possible that there is a spring plant toxic to cattle but not to horses. Or toxics could have been introduced on the tract.

Or the veterinarian and pathological examination could have been in error. We will have to analyse the situation further.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

Tract 10 came under our ownership January 1. Most of our efforts were concentrated toward cleanup, restoration and development of that farm for wildlife betterment. Our activities are shown in the photo section of this report. The reader should refer to pages 4 to 6 in the photo section for more details of the project.

Further refinements of pond and dike No. 5, built last fall, were made. Several minor structures built during the initial years of the refuge were modified and incorporated with SAFETY features. A bridge was built across the South Drain.

The pumphouse at the Work Center was modified and insulated. We now have a year round water supply there that can be pumped as an assistance in fire suppression, if necessary.

Fencing, irrigation ditch cleaning and repair, timber stand improvement, road crowning and repairing, posting and hunting season preparations and maintenance, and management of our land use program took a good portion of our time this year.

As with all refuges, we had to operate under severe budget and personnel ceilings. We did feel that we got a lot done though, for the dollar, for the man-hour, and above all, for our wildlife objectives.

B. Plantings

Under sharecropping arrangements 219 acres were planted to barley and winter wheat. Another 30 acres was planted in winter wheat and 42 acres are being fallowed for weed control. All farming was done on tracts 10, 11, 19, 20 and 21.

We elected to leave our share of the grain standing in the field this year. Of the 219 acres planted, 74 acres were left for the refuge. It is estimated that this would be about 3800 bushels of grain. Our share was left standing in alternate strips. The sharecropper would harvest two swaths, leave one standing, swath two more, etc. We believe this harvest method is most fair and will afford best wildlife utilization of the fields.

Last year we spot planted pasture seed for range management improvements. Also, brush and tree seedlings in strategic areas for bird food cover, shelterbelt and esthetic values. Details and maps were furnished in the 1967 Narrative Report. We did further planting this year in those same areas to offset mortality received last winter. A total of 600 more seedlings were planted. Survival was about 80 percent. It is anticipated that we can expand our shelterbelt plantings this spring.

C. Collections and Receipts

The 600 tree and brush seedlings mentioned above were purchased in Missoula from the State Forest Nursery.

D. Control of Vegetation

Limited spraying was done by sharecroppers on tracts 11, 19, 20 and 21 to combat mustard and thistle infestation on our agricultural lands. 2-4-D was applied with good results.

No further weed control was practiced.

E. Planned Burning

The only burning conducted was incidental burning during some of our irrigation ditch cleaning and of debris and slash disposal on tracts 10 and 21 west.

F. Fires

Only one small grass fire occurred on the refuge this year. It was on tract 19 west, adjacent to the golf course. The golf course was burning out their "rough." The fire spread onto the refuge. A phone call to golf club members brought six helpers and three vehicles within ten minutes. The fire was contained in about an acre and a half and was easily suppressed.

IV. RESOURCE MANAGEMENT

A. Grazing

Our grazing season started the third week in May and ended between September and December, depending on the specific tract involved.

Grazing occurred in limited amount on the west end of the newly acquired tract 10. It is intended to incorporate that grazing unit with the grazing of tract 11 next season.

Water and conditions for forage growth was ample this season. We had six grazing operators under special use permit, grazing 215 head of cattle, 19 horses; using a total of 978 A.U.M.'s on 1,140 acres for the period involved.

B. Haying

Thirty-seven tons of alfalfa hay was harvested on tract 20 in two cuttings. This is a three year rotation crop with our grain raising activity there.

C. Fur Harvest

None requested or done this year.

D. Timber Removal

No commercial timber removal done. The only timber removal was in limited amounts for road or fence right of way and dike building. The timber is of a scrub nature and has no local merchantable value. It was saved and stockpiled for future refuge projects such as abuttments and cribbing.

E. Commercial Fishing

Not applicable.

F. Other Uses

Limited aparian activities continued under permit this year. The beehives are located along the south refuge boundary.

V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Progress Report

The station's initial banding program was done last January and February. Baited funnel traps were used. Over 500 birds were banded. Almost all mallards. Terminal birds winter in this area due to the warm water sloughs and relatively open weather. We hope to eventually learn how these wintering birds disperse for the nesting season. Also, if the same birds come to this locality to winter. And what is the correlation with the Ninepipe-Pablo Refuge bird movements. We intend to band about 500 post-season mallards during each of the next few years to help accumulate this and other data.

A magpie trap was constructed last spring. It is baited with offal and placed in magpie concentrated areas. Our objective was to remove some of the magpies causing obvious duck and pheasant nest predation. A picture of the trap is shown in the photo section of this report.

Another dozen wood duck houses were constructed and erected this past spring. It appears that the wooden, homemade, crude type of house is still preferred by the bird.

Further treetop goose nests were constructed this year. All these were done on tract 10. These are shown in the photo section of this report.

Severe wind storms occurred here in July. This is unusual for the valley is normally protected by the mountain ranges on three sides. Many cottonwood trees were blown over on the refuge. The blow-down young trees presented no serious problem other than for cleanup. However, we did lose some valuable old softwood snags that were known to support nesting wood ducks and hooded mergansers in the past.

Six hundred tree and brush seedlings were hand planted on various spots of the refuge this spring. Locations are the same as shown on the map in last year's report. The main purpose of the planting is for increased bird food and cover in the future with emphasis on song bird assistance. Survival of the seedlings was good, about 80 percent. Adequate moisture helped that survival.

VI. PUBLIC RELATIONS

A. Recreational Uses

Based on our Monthly Public Use Report, Form 3-123, we had the following breakdown of refuge visits: hunting 1350, fishing 2600, and total miscellaneous visits 17,000.

Visitor use of the refuge has increased again this year. The rate of use has increased each year since we were established in 1964. Our greatest amount of visitors are individuals and groups seeking wildlife orientated tours and discussions.

School groups, church groups and other youth groups used the area considerably during the springtime. The highlights of these visits are treated in the photo section of this report.

A secondary county road runs through the refuge. It passes by several of our major developed ponds and marsh areas. This route affords many individuals an opportunity to view waterfowl and shorebirds easily and at their own leisure.

The spring ornithology class at the University of Montana, Missoula, uses the area, by arrangement, for field identifications of bird species. The area has afforded them some wonderful opportunities during the past few years. They are able to see 30 to 50 species within a few hours of observing.

The Bitterroot Valley is rich in the past history of Montana. It was on the Lewis and Clark route. It was here that the territory started and the first white men settled. The area of the refuge was a part of that past history. We were able to gather information of three significant historical sites on our area. We abstracted the accumulated historical material and wrote and designed three historical posters. They are placed along the county road. The signs are shown in the photo section of this report.

B. Refuge Visitors

Office space is rented in the town of Stevensville and visitors are quite common daily. Bird watchers, sportsmen, civic individuals, nature orientated recreationists and special use users stop in frequently to inquire about topics of their interests.

A bound office ledger is maintained of all official administrative visitors to the station. The log is a permanent station file. It records that 79 administrative office visits were made during the year.

A county road runs through the refuge. Many visitors use that road year round for pleasure driving and sight seeing. Probably in excess of 7,000 individuals use that route through the refuge each year.

C. Refuge Participation

This year, again, our largest participating efforts were requested by organized bird watching and school groups. We frequently presented guided tours and talks of the refuge, collaborated on locality bird counts and gave discussions to various school, sportsmen and fraternal groups.

Mainly grade school levels contacted us for assistance. But several discussions and projects were established with high school biology and university ornithology classes.

Conservation films were shown to nine groups during the year. Total attendance was 206 people.

D. Hunting

One third of the refuge was open to public hunting. The open area was identical to last season. A map follows this section showing that boundary.

Waterfowl. Waterfowl season was conducted from October 5 to December 29. Daily limit was five ducks, including no more than three mallards, nor more than two canvasbacks. Daily and possession limit on geese was six birds, with no more than two Canada geese or their subspecies, nor no more than one Ross' goose. There was a further State restriction in five western counties. It limited a hunter to a maximum kill of no more than six Canada geese during the entire season. Ravalli County was included in this regulation. Enforcement was based on punching the hunter's license as he was checked or reported his kill. The whole regulation of a six bird limit was pretty much an honor system. It would seem that if tags were issued, similar to pheasant hunting in California, the law would have more enforcement ability. The purpose of the limit is to minimize killing of local goose flocks.

An initial and experimental Wilson's snipe hunting season was conducted this year. It was done State-wide. The season was from October 5 through November 23. Limit was eight daily, with possession 16. A few hunters collected snipe incidental to their other bird shooting. But the harvest was very light. Most people through this locality still consider Wilson's snipe, as the mourning dove, as a song bird.

Hunting pressure was heavy all season. About 200 hunters weekly used the section of public hunting land. Harvest was rated as fair to good. The heaviest kill was at the beginning of the season on local young birds. The movement of waterfowl through the area was later than normal. A dribble occurred all fall but the major build-up was concentrated in front of storm fronts early in December. Form NR-1C shows the hunter kill survey statistics. Ninety-six percent of the birds taken were mallards.

We maintain two volunteer checking stations. They are strategically located so that the hunters must go by them from their vehicles to the field. However, our hunter cooperation was rather poor this fall. It was necessary to do more patrolling and make more field contacts than in the past to gather kill survey data.

Pheasants. Pheasant hunting season was from October 26 through November 17. Bag was three cocks and possession of six.

Refuge hunting pressure was rated as high for the first few days only. It was estimated that about 50 pheasants of the 250 refuge population were killed during the entire season.

Archery, white-tail deer hunting. The archery season along the riverbottom of the valley, including the refuge, was September 23 through November 19. One individual hunted on the refuge for several days with no success. This was our only known archery hunting. The entire refuge has a population of about 16 deer.

E. Violations

About twenty percent of our fall activity is directed toward patrol and law enforcement. We receive considerable hunting pressure here for this is the heaviest populated area of Montana. Our main concerns were with trespass, infringement on closed areas and late shooting. Efforts were directed towards prevention where possible. Many hunters were contacted and we discussed our program and current regulations.

A juvenile was apprehended while hunting and killing ducks on a closed area. He was arraigned before the local Justice of the Peace with his parents present. Total fines were $85.50 with all suspended but $10, and the youth was put on a year's probation. A university professor was apprehended pursuing a pheasant on a closed area. The violator was arraigned before the local Federal Commissioner. He pleaded guilty and was fined $25. The third case, a late shooter, was turned over to the Missoula Fish and Game office. They contacted

us and said they could not handle the case unless we filed a complaint and requested a warrant to be issued. We contacted the violator and handled the case ourselves through the local Justice of the Peace. He was fined $25.00, plus $3.50 court costs.

No State Fish and Game personnel were seen patrolling on or around the refuge this year.

We received reports that some fishing occurred on the ponds of the public hunting area this fall. These waters are closed by Federal Register to fishing. The reason for the closure is that the refuge is of a pothole and small reservoir type, dedicated to waterfowl management. Fishing would conflict with hunting activities in the fall. Post hunting season fishing would conflict with the use of the small area by terminal wintering birds. Spring fishing would conflict with spring migrations of waterfowl. Summer fishing would conflict with nesting birds. Late summer-early fall fishing would conflict with early migrants such as teal and wood duck. Therefore, we can see no substantial reason why we should dedicate efforts toward fishing. Especially when one considers the great amount of fishing available throughout this general area.

One violator from Missoula was apprehended while fishing on the refuge. He said that he cleared through the State Fish and Game office and they told him that as far as they were concerned the area was open to fishing. We called the Missoula District Office and evidently some of their personnel have been informing the public accordingly for nothing is in their proclamations prohibiting fishing on refuges. This whole situation is quite awkward and hinges on things more deeply rooted. We dismissed the violator, cautioning him of circumstances of a federal area, and further posted our land against fishing.

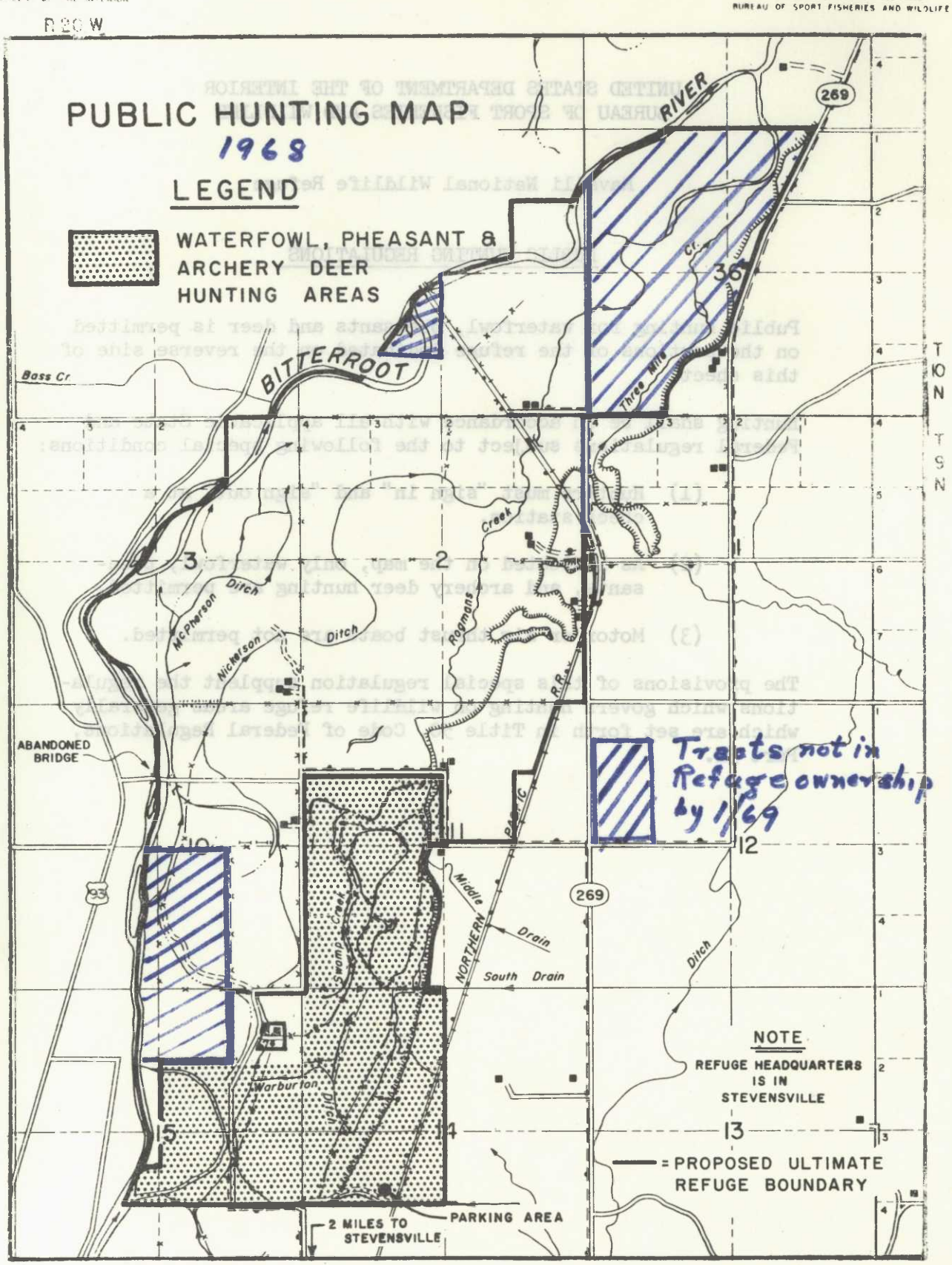
We are attempting to get something in the State proclamation prohibiting fishing on the refuge. We have had rather good agreement with the Missoula District Office Supervisor. But we feel that his recommendations to Helena will probably meet with obstacles.

RAVALLI NATIONAL WILDLIFE REFUGE

RAVALLI COUNTY, MONTANA

UNITED STATES
DEPARTMENT OF THE INTERIOR

U S FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE



COMPILED IN THE BRANCH OF ENGINEERING FROM SURVEYS BY AERIAL PHOTOGRAPHY, F&WS., B.L.M., U.S.G.S., AND MONTANA STATE HIGHWAY DEPARTMENT

PORTLAND, OREGON AUGUST 1966

PRINCIPAL MERIDIAN

Scale 0 10 20 40 60 80 CHAINS
0 1/8 1/4 1/2 3/4 1 MILES

TOWNSHIP DIAGRAM

MEAN DECLINATION 1962

IR MONT 655 41

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF SPORT FISHERIES AND WILDLIFE

Ravalli National Wildlife Refuge

PUBLIC HUNTING REGULATIONS

Public hunting for waterfowl, pheasants and deer is permitted on the portions of the refuge indicated on the reverse side of this sheet.

Hunting shall be in accordance with all applicable State and Federal regulations subject to the following special conditions:

(1) Hunters must "sign in" and "sign out" at a check station.

(2) As indicated on the map, only waterfowl, pheasants, and archery deer hunting are permitted.

(3) Motor or air thrust boats are not permitted.

The provisions of this special regulation supplent the regulations which govern hunting on wildlife refuge areas generally which are set forth in Title 50, Code of Federal Regulations, Part 32.

VII. OTHER ITEMS

A. Items of Interest

A stream guage reading station was constructed across the Bitterroot River. The project was done by the Montana Water Conservation Board. The guage will serve to record returned irrigation water back to the river. It is correlated with the guage situated upstream near Corvallis. The structure is located in part on refuge tract 13. A special use permit was issued for that activity for a twelve year period. (See photos No. 3 and 4.)

Mr. Robert McElhaney, Sr., has been employed with us as a seasonal laborer for the past three years. We also purchased refuge tract 20 from Mr. McElhaney. Bob reached age 70 when he was terminated at the end of the field season. We wish Bob a good retirement. We know that a person of his energies will keep very active and busy.

This section of last year's Narrative Report made mention of the lawsuit of lands adjacent to the refuge, between Hamilton attorneys and the Northern Pacific Railroad. Nothing further has developed with this case during this past year.

PHOTO SECTION

The following 39 photos illustrate the highlights of our year's accomplishments and activities.

This is a rather large photo section, but we feel that pictures describe more fully than words what we want to tell of the area. Also, the pictures are to serve as a permanent visual record for the future.

We started the year by post season banding. It was our first banding effort. Articles and pictures in the local newspaper caused favorable interest in the project.

Units of local high school biology class observed and participated in some of our activities. We preceded their field trip with a short class discussion of banding practices and history.

NR68-1 & 2. Jan. Tr.11

Montana Water Conservation Board took advantage of the rather mild winter and constructed a guage reading station across the Bitterroot River. It was done in part on tract 13. We issued a special use permit.
The purpose of the gauge will be to help measure valley irrigation runoff and return to the river.

NR68-3 & 4. Tr. 13

We wrote and designed three historical signs this spring. Data was based on three years research sifting.

The Forest Service sign shop in Missoula made the signs for us. We erected them along the county road running through the refuge.

Public reaction to the signs was extremely complimentary and gratifying.

Our purpose was to record and preserve historical values of our area.

NR68-5, 6, 7. Along county road.

BEFORE

Tract 10, 5/68. Looking west.

AFTER

Tract 10, 8/68

Tract 10 came under our complete ownership this year. Much of our field efforts were directed to clean-up, restoration and development of the unit. A small warm water creek flows through the tract. Simple diking and water control risers converted the half section of marginal overgrazed pasture, with poor shallow soils into excellent waterfowl habitat. Marsh and open water extends through the tree type affording "compartments" for nesting. Also note constructed nesting islands to the left.

The area received about 123,000 duck days use already.

NR68-8 & 9

More on tract 10 --

Earth moving was done by contract hired self-propelled scrapers and a pusher cat. The borrow pit was close and the haul was down hill. The dirt was moved for 17¢ a yard!

Regular culvert stop-log risers were used. They were placed with a rented dragline and covered and sloped with our little TD-14.

Most trees were left on the flooded part of the tract. The scrub timber has no market value and will eventually serve as habitat divisions within the unit. They will attract wood duck, herons, Canada geese, swallows and other snag seeking birds. What trees we did cut we stockpiled as future project material.

Tract 10 NR68-10,11,12.
May, June, July

More on tract 10 --

Various types of artificial tree top goose nests were installed on the unit prior to flooding.

The trees are numbered for future studies.

Camouflaged painted wash tubs and wire baskets filled with cattails were most commonly used.

Tract 10. August
NR68-13, 14, 15

North of Refuge
NR68-16. 5/68

tract 10, west end
NR68-17. 5/68

Osprey nest on private land 1/2 mile north of the refuge. They are seen feeding on trash fish on tract 10 often.

We hope to encourage them, or their progeny, to nest on the refuge for their betterment and protection.

More wood duck houses were scattered on potholes this spring.
This is the galvanized commercial "rocket" type.

NR68-18. tr. 27. May

However, it seems our birds prefer the rough lumber home-made type of box.
This one is quite low to the water but it was used.

NR 68-19 tr. 21 May

Further minor potholes were built this year by shallow scraping to expose the high water table.
Ammonium nitrate blasting would be dangerous to use due to the gravel and rock.
The pond will vegetate naturally and serve ducks and shorebirds.

NR68-20 tr. 21 July

A cool but abnormally dry spring allowed us to start our farming activities in April.

tr. 19. April

Further shelterbelt rows were planted to eventually divide flat field and afford diversified habitat.

tr. 20. May

Several old ditches on tr. 21 were restored this year affording better water dispersal and utilization for forage production and bird escape cover.

tr. 21 June

NR68-21, 22, 23

NR68-24

tr. 12 June

NR68-25

tr. 20 June

Two new "concoctions" used this summer. The top is a magpie trap, baited with offal. It was used to help reduce depredation on duck and pheasant nests.

The bottom is a self cleaning ditch sump for an irrigation sprinkler pumping station. It operates by a "Rainbird" head rotating on the inside of the filter screen to flush the flotsam away and down the ditch.

BEFORE

We have always needed a vehicle bridge across the South Drain. A culvert would plug with watercress. A ford would be temporary and hazardous.

We found time to get the job done this season.

AFTER

Cement, surplus "I" beams and treated timbers were used.

NR68-26, 27 tr. 21. Aug.

Also took time this season to revamp our oil-pumphouse at the Work Center. It is now insulated and wired so that water can be pumped year round for fire suppression.

NR68-28 tr.13 Sept.

High winds are rare in this valley due to mountain arrangements. However, we received a storm of gale force this July. Much damage was done through the area. Ours was limited to trees being upheaved along trails and roads. Clearing took about ten man days. (Didn't program schedule for that!)

NR68-29 tr. 21

We had an excellent crop of barley and wheat this year. One third of the crop, in alternate strips, was left standing. All our farming is next to pond areas.

NR68-30 tr. 21. Pond #2
Sept.

BEFORE

AFTER

We took advantage of low water levels this fall and modified some of our "temporary" water control structures.

This is the one controlling Burnt Fork Creek water.

A substantial crib was built and filled with riprap. Also a Safety-walk ramp installed.

NR68-31, 32

Requests for visitor-use of the refuge started early in the spring.

Garden Clubs, high school and university ornithology classes were common visitors. Adult agricultural groups from other towns of the valley came down for refuge tours and discussions.

We had to host all our groups outdoors due to our lack of facilities.

NR68-33, 34, 35, 36. tr. 20,
11, 19, 13. Mar. Apr. May

Kids' groups were important visitors.

We conducted tours for church groups--sometimes discussing nesting habits of song birds.

or boy scout groups--discussing mammals as well as historical events from "the ol' wild west."

Most times the best way to alert the interest of a school class is with a "happening."

If a garter snake is found, it is always good for openers. From there we can go to hibernation and migrations, food chains, etc.

NR68-37, 38, 39. Spring

SIGNATURE PAGE

Submitted by:

(Signature)

Refuge Manager
(title)

Date: 1/17/69

Approved, Regional Office:

Date: 2/18/69

(Signature)

(Title) Asst Div. Supt.

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE RAVALLI MONTHS OF JANUARY THRU APRIL, 1968

(1) Species	(2) Weeks of reporting period: 12/31 (1)	1/7 (2)	1/14 (3)	1/21 (4)	1/28 (5)	2/4 (6)	2/11 (7)	2/18 (8)	2/25 (9)	3/3 (10)
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	35	10	10	10	10	40	40	40	35	50
Cackling										
Brant										
White-fronted										
Snow										
Blue										
~~Other~~ TOTAL	35	10	10	10	10	40	40	40	35	50
Ducks:										
Mallard	3,500	2,500	1,000	1,000	1,000	4,000	3,000	4,000	4,500	5,000
Black										
Gadwall										
Baldpate	200	300	100	50	50	50	50	100	200	400
Pintail	100	100	50	50	50	50	50	100	100	100
Green-winged teal	50	25	25	25	25	25	25	25	25	200
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup	20									
Goldeneye	20									
Bufflehead	20	20	20	20	20	20				50
Ruddy										
~~Other~~ C. Merganser						10	22	10	15	10
H. Merganser										20
TOTAL	3,910	2,945	1,195	1,145	1,145	4,155	3,147	4,235	4,840	5,780
Coot:	100	50	50	50	50	---	---	30	50	50

3 -1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE RAVALLI MONTHS OF JANUARY THRU APRIL, 1968

(1) Species	(2) Weeks of reporting period: 3/10 (11)	3/17 (12)	3/24 (13)	3/31 (14)	4/7 (15)	4/14 (16)	4/21 (17)	(18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:											
Whistling	8	13	20	4					315		
Trumpeter											
Geese:											
Canada	45	45	50	50	70	60	50		4,550		
Cackling											
Brant											
White-fronted											
Snow		8	35	150	10	4			1,449		
Blue											
Other TOTAL	45	53	85	200	80	64	50		5,999		
Ducks:											
Mallard	5,500	5,500	5,000	5,000	4,000	3,000	2,400		419,300		
Black											
Gadwall				100	200	100	100		3,500		
Baldpate	1,000	1,000	1,000	1,000	1,000	800	500		54,600		
Pintail	800	1,000	1,000	800	800	800	600		45,850		
Green-winged teal	400	1,000	800	500	300	300	300		28,350		
Blue-winged teal											
Cinnamon teal			40	20	100	200	200		3,920		
Shoveler	50	30	20	20	200	300	500		7,840		
Wood		30	40	40	40	60	60		1,890		
Redhead				40	40	20	20		840		
Ring-necked	10	10				10	10		280		
Canvasback				20	50	50	50		1,190		
Scaup	20	20		20	40	40	60		1,400		
Goldeneye				10	10	20	20		560		
Bufflehead	50	20	20	20	20	20	40		2,520		
Ruddy					10	10	10		210		
Other C. Merganser	30	30	30	20	40	40	40		2,079		
H. Merganser	20	40	40	40	40	40	40		1,960		
TOTAL	7,880	8,680	7,990	7,650	5,890	5,810	4,930		576,289		
Coot:	100	100	200	350	600	1,000	1,200		27,850		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	315	20	
Geese	5,999	150	
Ducks	576,289	5,500	
Coots	27,860	1,200	

SUMMARY

Principal feeding areas Entire refuge, sloughs, marshes, and grain fields.

Principal nesting areas

Reported by G. A. Doyen, Refuge Manager

CLASS C INVENTORY

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	2	4/18	50	4/30	still present			100
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	1	1/25	1	1/25	1	1/25		1
Duck hawk								
Horned owl 10 present	from last	period	15	4/18	15 still present			15
Magpie " "	" "	"	150	April	resident			150
Raven	2	3/11	10	April	10	April		10
Crow	12	1/17	30	4/18	still present			100
Marsh hawk 6 present	from last	period	6	March	4 still present			10
American rough-leg	4-All Jan.		4	Jan.	1	April		4
Short eared owl	2	4/5	4	April	4	April		6
Osprey	2	4/10	2	April	still present			4
Bald eagle	1	3/6	2	March	1	3/29		2

Reported by G. A. Devan, Refuge Manager

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Ravalli Months of January thru May 1968

CLASS C INVENTORY

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Great blue heron	from last period		12	April	still present					15
Eared grebe		4/19	10	4/29	"	"				30
American bittern	1	3/4	1	3/4	1	3/4				2
II. Shorebirds, Gulls and Terns:										
Killdeer	from last period		40	April 30	still present					60
Wilson's snipe	"	"	200	"	"	"				300
Greater yellowlegs	10	4/12	20	"	"	"				30
Dowitcher	30	4/18	50	"	"	"				100
Avocet	20	4/18	40	4/27	"	"				50
Wilson's phalarope	30	4/22	200	4/30	"	"				300

(over)

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge **Ravalli** Months of **January** to **April**, 19**68**

(1) * Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring neck Pheasant	**Brush, grass, agriculture, 2000 acres**	40			1/1	-	-	-	50	**Lack of snows appeared to help winter survival valley-wide.**

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Ravalli Year ending April 30, 1968

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Population
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator * Control	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Mink	Marsh. 800 acres	32		— NONE —				— NONE —						25
Beaver	Marsh. 800 acres	200												4
Muskrat	Marsh. 800 acres	6												150
Striped skunk	Grass, brush. 2200 acres	73			5									30
Red fox	" "	185			2									12
Yellow-bellied marmot	Upland. 1000 acres	50			4									20
Red squirrel	Timber. 700 acres	14												50
Columbian ground squirrel	Grassland. 1000 acres	6												200
Badger	Grassland. 1000 acres	250			1									4
Raccoon	Riverbottom & bank water. 100 acres	7												15

* List removals by Predator Animal Hunter

REMARKS: No appreciable change from last year noted.

Reported by G. A. Devan, Refuge Manager

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

INTERIOR--PORTLAND, OREGON

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE RAVALLI MONTHS OF MAY THRU TO AUGUST, 1968

(1) Species	(2) Weeks of reporting period: 4/28 (1)	5/5 (2)	5/12 (3)	5/19 (4)	5/26 (5)	6/2 (6)	6/9 (7)	6/16 (8)	6/23 (9)	6/30 (10)
Swans:										
Whistling			1	1	1	1	1	1	1	1
Trumpeter										
Geese:										
Canada	50	40	40	40	30	20	20	20	30	30
Cackling										
Brant										
White-fronted										
Snow	4	4	2							
Blue										
~~Other~~ TOTAL	54	44	42	40	30	20	20	20	30	30
Ducks:										
Mallard	2,000	1,800	1,500	1,400	1,200	1,000	1,000	1,000	1,000	1,000
Black										
Gadwall	100	50	50	50	50	30	30	30	50	50
Baldpate	400	200	200	100	100	50	50	50	50	50
Pintail	500	200	200	50	50	20	30	30	20	20
Green-winged teal	300	200	100	100	100	100	100	100	100	100
Blue-winged teal	100	100	200	100	100	200	200	200	200	300
Cinnamon teal	200	200	300	400	400	400	400	400	400	300
Shoveler	400	300	200	100	100	50	50	50	50	50
Wood	60	60	60	60	60	40	40	40	50	50
Redhead	20	—	20	30	20	40	40	40	40	40
Ring-necked	10	—	20	20	20	20	20	20	20	20
Canvasback	50	50	50	50	50	20	20	20	30	30
Scaup	100	100	100	100	100	50	20	20	20	20
Goldeneye	20	20	20	10	10					
Bufflehead	20	20	10		10					
Ruddy	50	50	40	30	30	50	50	50	50	50
~~Other~~ TOTAL	4,330	3,350	3,070	2,600	2,430	2,070	2,050	2,050	2,080	2,080
H. merganser	30	20	20	80	30	40	40	40	40	40
C. merganser	10	10	10	10	10					
TOTAL	40	30	30	90	90	40	40	40	40	40
Coot:	1,000	1,000	1,000	1,100	1,100	1,200	1,300	1,300	1,300	1,300

3 -1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE RAVALLI MONTHS OF MAY THRU AUGUST, 1968

(1) Species	(2) Weeks of reporting period: 7/7 (11)	7/14 (12)	7/21 (13)	7/28 (14)	8/4 (15)	8/11 (16)	8/18 (17)	8/25 (18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:											
Whistling	1	1	1						77		
Trumpeter											
Geese:											
Canada	20	10	10						2,520	5	30
Cackling											
Brant											
White-fronted											
Snow									70		
Blue											
~~Other~~ TOTAL	20	10	10						2,590	5	30
Ducks:											
Mallard	1,000	1,000	1,000	800	700	600	600	800	135,800	50	400
Black											
Gadwall	50	50	50	50	50	50	100	100	6,930	10	60
Baldpate	50	50	50	50	50	50	50	50	11,550	12	70
Pintail	20	20	20	30	50	50	50	50	9,870	2	15
Green-winged teal	100	100	100	150	200	200	200	200	17,850	30	200
Blue-winged teal	300	300	300	300	350	350	350	350	30,100	40	400
Cinnamon teal	300	300	300	400	300	200	200	200	39,200	28	290
Shoveler	50	50	50	50	50	50	50	50	12,250	2	10
Wood	50	50	150	200	250	300	200	150	13,090	30	200
Redhead	40	40	40	40	40	40	40	40	4,270	1	6
Ring-necked	20	20	20	50	50	20	20	20	2,730	2	14
Canvasback	30	30	30	10	10	10	10	10	3,570	3	20
Scaup	20	20	20	50	50	50	50	50	6,500	4	25
Goldeneye									560		
Bufflehead									420		
Ruddy	50	50	50	100	100	100	100	100	7,700	10	70
~~Other~~ TOTAL	2,080	2,080	2,180	2,280	2,250	2,070	2,020	2,170	302,470	224	1,760
H. merganser	40	40	40		10				3,920	8	70
C. merganser									350	2	16
Coot: TOTAL	40	40	40		10				4,270	10	86
	1,500	1,500	1,500	1,500	1,000	1,000	1,200	1,200	154,000	50	400

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	77	1	—
Geese	2,590	50	30
Ducks	302,470	2,000	1,780
Coots	154,000	15	400

SUMMARY

Principal feeding areas Entire refuge, sloughs, ponds and marshes.

Principal nesting areas Same as feeding area.

Reported by G. A. Deven, Refuge Manager

All Class C inventory, except for weeks #15, 16 & 17, which were Class D.

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove	100	last per.	300	July	100	Still present	20	160	300
White-winged dove									
IV. Predaceous Birds:									
Golden eagle									
Duck hawk						Still			
Horned owl	8	last per.	15	July	8	present			1
Magpie	100	" "		July	100	"	10	50	150
Raven			5	5/15	2	6/30			6
Crow	30	" "	75	June	10	Still present	5	25	150
Red-tailed hawk	4	5/2	10	July	5	" "	2	8	12
Sparrow hawk	20	5/2	40	Aug.	20	" "	10	40	150
Marsh hawk	4	last per.	10	May	4	" "	2	6	10
Osprey	2	last per.	5	7/15	4	Still present, transient.			5

Reported by G. A. Bevan, Refuge Manager

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Ravalli Months of May to August 1968

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Great blue heron	12	from last per.	25	Aug.	10	Still present	1	6	30	50
Eared grebe	10	" " "	30	7/14	20	"		10	60	150
Horned grebe	20	5/12	75	5/20	10	8/19		5	20	100
Pied-billed grebe	1	5/14	20	6/10	10	8/19		6	35	100
II. Shorebirds, Gulls and Terns:										
Killdeer	40	from last per.	250	July	100	Still present		50	200	250
Wilson's snipe	200	" " "	200	June	100	"		50	150	300
Greater yellowlegs	20	" " "	50	May	12	6/10		---		50
Lesser yellowlegs	12	5/2	50	May	1	6/10		---		50
Avocet	40	from last per.	40	May	1	6/10		---		50
Sora rail	1	5/2	40	July	50	End of Per.		5	10	60
Wilson's phalarope	200	from last per.	200	May	10	8/19		10	40	200
Northern phalarope	20	5/29	35	6/1	11	6/10		---		100
Black tern	50	6/12	50	6/12	15	6/24				100
*Semi palmated plover	10	from last per.	20	5/14	1	6/10		---		30
*Forester's tern	12	6/12	12	6/12	1	6/29				20
*Bonepart gull	16	6/12	16	6/12	16	6/12				

(*New station species)

(over)

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Ravalli   For 12-month period ending August 31, 1968

Reported by G. A. Devan   Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	Acreage		(3) Use-days	(4) Breeding Population	(5) Production
Refuge all one unit.	Crops	300	Ducks	1,196,664	428	1,780
	Upland	1,000	Geese	9,758	10	30
	Marsh	600	Swans	511	--	--
	Water	380	Coots	254,660	100	400
	Total	2,280	Total	1,461,593	538	2,210
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

(1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

(2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

(4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

(5) **Production:** Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C. 27580

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Ravalli Months of May thru ~~Dec~~ August, 19 68

(1) * Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring neck pheasants	Brush, grass, agriculture 2000 acres	8	14	90	1M/4F				250	State Fish & Game released 175 hens and 33 roosters on 6/8. This was a cleanup of their hatchery at Warm Springs. Some mortality was noted.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE BAVALLI

MONTHS OF SEPTEMBER THROUGH TO DECEMBER, 19 68

(1) Species	9/1	9/8	9/15	9/22	9/29(2)	10/6	10/13	10/20	10/27	11/13
	Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling	1	1	1						6	2
Trumpeter										
Geese:										
Canada	20	20	10		36		12		12	
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
TOTALS	20	20	10		36		12		12	
Ducks:										
Mallard	800	800	1,000	1,000	1,000	1,200	1,200	1,400	1,400	2,500
Black										
Gadwall	100	100	200	100	100	100	100	100	100	200
Baldpate	50	100	100	100	100	200	300	300	300	400
Pintail	50	50	100	100	50	50	100	100	100	100
Green-winged teal	200	200	300	300	300	400	300	300	300	400
Blue-winged teal	350	300	400	400	400	300	100			
Cinnamon teal	200	200	100							
Shoveler	50	50	50	50	50	100	100	100	100	100
Wood	100	150	200	200	100	50	40	10		
Redhead	40	50	50	50	50	100	50	100	100	100
Ring-necked			20	20		50	50	50	100	50
Canvasback	10	20	20	20	20	50	50	50	20	
L. Scaup			50	100	50	100	50	100	100	100
Goldeneye									50	50
Bufflehead										
Ruddy	100	100	300	350	350	400	200	200	200	200
Gibson C. Merganser			10				30	30		30
H. Merganser	10		20	20	20	20			20	
TOTALS	2,060	2,120	2,920	2,810	2,590	3,020	2,670	2,840	2,890	4,230
Coot:	1,000	1,500	1,800	1,500	1,500	2,000	1,500	1,400	1,000	800

3 -1750a

Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE RAVALLI MONTHS OF SEPTEMBER THRU DECEMBER, 1968

(1) Species	11/10	11/17	11/24	12/1	(2)12/8	12/15	12/22		(3) Estimated waterfowl days use	(4) Production Broods seen	(4) Production Estimated total
	Weeks of reporting period										
	11	12	13	14	15	16	17	18			
Swans:											
Whistling	2								91		
Trumpeter											
Geese:											
Canada	35			40	92	135	104		3,612		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other TOTALS	35			40	92	135	104		3,612		
Ducks:											
Mallard	2,500	4,000	5,000	9,000	6,000	6,000	6,000		355,600		
Black											
Gadwall	100	100	100	100	200		100		13,300		
Baldpate	400	400	500	800	800	800	500		43,050		
Pintail		50	50		100	100	100		8,400		
Green-winged teal	300	300	300	400	400	400	200		37,100		
Blue-winged teal									15,050		
Cinnamon teal									3,500		
Shoveler	50	100			50	50			7,000		
Wood							30		6,070		
Redhead			100	100	50	50	50		7,280		
Ring-necked	20								2,520		
Canvasback			100	50	50	50			3,570		
Scaup	50		100	100	100	100	50		8,050		
Goldeneye	50	50	50		20	20	20		2,170		
Bufflehead	50	20	50	50	50	50	20		2,030		
Ruddy	30	50	50	50	100		50		19,110		
Other C. Merganser									700		
H. Merganser						10			840		
TOTALS	3,550	5,070	6,400	10,650	7,920	7,630	7,090		535,340		
Coot:	800	500	400	400	400	300	300		119,700		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	91	6	
Geese	3,612	135	
Ducks	535,220	9,000	
Coots	119,700	2,000	

ALL CLASS C INVENTORY

SUMMARY

Principal feeding areas Sloughs, marshes and grain fields on entire refuge.

Principal nesting areas

Reported by C. A. Dewan, Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	100	last per.	250	Sept.	2	12/6		300
White-winged dove								
IV. Predaceous Birds:								
Bald eagle	1	10/1	2	11/7	1	12/31		2
~~Pigeon Hawk~~								
Golden eagle	2	10/15	2	10/15	2	10/15		2
Duck hawk	1	12/31	1	12/31	1	12/31		2
Horned owl	8	last per	10	resident				20
Magpie	100	" "	200	Nov.	100	resident		300
Raven								
Crow	10	last per.	40	Nov.	40	12/14		50
Red-Tailed hawk	5	" "	5	Sept.	1	12/31		10
Sparrow hawk	20	" "	30	Sept.	2	12/31		50
Marsh hawk	4	" "	10	Dec.	5	12/31		15
Osprey	4	" "	4	Sept.	2	11/15		6
Roughleg hawk	1	Oct.	3	12/31	3	12/31		4
Goshawk	1	12/31	1	12/31	1	12/31		2

Reported by G. A. Devan, Refuge Manager

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes).

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Ravalli Months of September thru December 1968

CLASS D INVENTORY

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Great blue heron	10	last per.	10	Oct.	still present, transient					10
Eared grebe	20	" "	35	10/12	1	12/1				50
American bittern	1	9/5	1	9/5	1	9/5				2
II. Shorebirds, Gulls and Terns:										
Killdeer	100	last per	400	10/12	20	still present				500
Wilson's snipe	100	" "	250	Sept.	20	" "				300
Dowitchers	17	9/19	100	9/27	12	10/1				200
Lesser yellowlegs	75	9/19	75	9/19	4	10/7				100
Avocet	2	9/27	2	9/27	2	9/27				10
Wilson's phalarope	10	9/2	40	9/19	40	9/19				100
Northern phalarope	12	10/1	12	10/1	12	10/1				50
California gull	1	9/27	est. 10	Oct.	2	12/27				10
Virginia rail	1	9/2	3	10/14	1	12/27				20

(over)

3-1750c
Form NR-1C
(Sept. 1960)

WATERFOWL HUNTER KILL SURVE

Refuge Ravalli

Year 1968

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
Oct. 5-11	29	88	Mallard 25, Coot 22, G.W. teal 12, B.W.teal 11, Shoveler 6, Gadwall 6, H.merganser 1	83	17	100	200	700
12-18	28	61	Mallard 12, Coot 6, G.W. teal 2, Widgeon 2, Goldeneye 1, Ring-necked 1,H.merg. 1, Canvasback 1, Can. geese 2	28	7	35	190	245
19-25	15	24	Mallard 3, Bufflehead 2, G.W. teal 1, Ruddy 1	7	1	8	150	80
26-Nov. 1	12	21	G.W. teal 7, Mallard 5, B.W. teal 1, Shoveler 1, Gadwall 1	15	8	23	120	230
2-8	16	36	Mallard 5, G.W. teal 5, Goldeneye 2, Scaup 2, H. merganser 1, Ruddy 1, Can. goose 1	17	1	18	160	180
9-15	24	72	Mallard 12, Widgeon 7, Coot 4, G.W.teal 3, Bufflehead 1, Goldeneye 1	28	5	33	160	231
16-22	23	92	Mallard 29, G.W. teal 3, Pintail 3, Widgeon 2, Shoveler 1, Ruddy 1, Can.Geese 3	42	5	47	200	376
23-29	18	55	Mallard 13, Scaup 2, Gadwall 1	16	5	21	180	210
30-Dec. 6	15	45	Mallard 23, Redhead 3, G.W. teal 3, Widgeon 1	30	4	34	75	170
7-13	43	129	Mallard 37, Widgeon 4, G.W. teal 3	44	9	53	150	200
14-20	30	75	Mallard 46, Widgeon 1, Pintail 1	51	6	57	120	230
21-27	41	155	Mallard 65, Pintail 2, Gadwall 1, Shoveler 1, Can. goose 1	74	15	89	200	400
Dec. 28,29	8	24	Mallard 16, Widgeon 3	19	2	21	40	100

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Ravalli Months of September thru December, 19 68

(1) * Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ringneck Pheasants	Brush, grass, agriculture, 2,000 acres	11			1M/2F	50			150	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Ravalli Calendar Year 1968

CLASS B INVENTORY

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tail deer	Brush, timber, grass 1400 acres	6										16	16	3M/13F

Remarks:

Reported by _____
G. A. Devan, Refuge Manager

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each</u> <u>species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIC: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1755
Form NR-5
60701

DISEASE

Refuge Ravalli Year 19 68

Botulism

Period of outbreak _____

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Condition of vegetation and invertebrate life _____

Remarks _____

Lead Poisoning or other Disease

Kind of disease _____

Species affected _____

Number Affected

Species	Actual Count	Estimated

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks NOTHING TO REPORT FOR THIS YEAR

3-1757
Form NR-7
(Rev. June 1960)

(1)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge Ravalli Year 19 68

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs) Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Plantings (Marsh - Aquatic - Upland) Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Seedlings													
Russian olive	300 lb.	Purchased	5/68	State Forest Nursery	1½¢ea. $27	All planted 1967 (May)	Tracts 19, 20 and 21	3 ft. spacing	3/8 mile		5/68	80%	drouth
Honey-suckle	100 "												
Caragana	100 "												
Blue Spruce	100 "												

(1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Total acreage planted:
Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches 20 acres
Forest plantings _____

Remarks: _____

76148

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Ravalli County Ravalli State Montana

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Tract 10 - Barley	6	120 bu.			3	60 bu.	9		
Tract 11 - Barley	26	780 "			14	420 "	40		
Tract 19 - Barley	20	800 "			10	400 "	30		
Tract 20 - Barley	33	1750 "			17	875 "	50		
Tract 21 - Barley	40	2600 "			20	1300 "	60		
" - Wheat	20	1600 "			10	800 "	30	Browse, winter wheat	30
Totals	145	7650			74	3855	219	Fallow Ag. Land Tract 19	10
								20	12
								21	20
									42 Total

No. of Permittees: Agricultural Operations 3 Haying Operations 1 Grazing Operations 6

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Alfalfa	37	10	$221	1. Cattle	215	943.70	2,831.10	960
				* 2. Other Horses-mules	19	34.79	104.37	180
				1. Total Refuge Acreage Under Cultivation				301
Hay - Wild				2. Acreage Cultivated as Service Operation				

*Including 13 head Forest Service horses pastured fee free, on ~~intermittent basis.~~

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.DUP.,D.C.61-88850

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Ravalli Months of Calendar Year 1968 through , 195

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Barley	465	-	465			165		300		300	

(8) Indicate shipping or collection points

(9) Grain is stored at Refuge Work Center

(10) Remarks To be used for bait trapping of waterfowl.

*See instructions on back.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

INT.-DUP. SEC., WASH., D.C. 59323

3-1761
Form NR-11
(2/46)

TIMBER REMOVAL

Refuge Ravalli Year 1968

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
			NO COMMERCIAL CUTTING PERFORMED					

Total acreage cut over..... Total income.....

No. of units removed B. F..... Method of slash disposal.....

Cords.....

Ties.....

.....

INT.-DUP. SEC., WASH., D.C. 36103

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

Refuge **Ravalli**

Proposal Number

Reporting Year **1968**

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
June 26, 27 July 1	Annual mustard Canada & Scotch thistle	Agricultural lands of tracts 11, 19, 20 & 21	150	2,4D	300 lbs.	2 lbs./acre	water 2 lbs./ 100 gal.	spray
July 3 & 5	Knapweed & Scotch thistle	grasslands of tract 19 west	70	2,4D	210 lbs.	3 lbs./acre	water 3 lbs./ 100 gal.	spray

10. Summary of results (continue on reverse side, if necessary)

95% kill on mustard
75% kill on thistle

INTERIOR--PORTLAND, OREGON